components of the vehicle based on sensor signals outputted from corresponding sensors. A test switch 24 is provided to the engine control unit 16. The test switch 24 is provided for setting a diagnosis mode for outputting a result of the diagnosis. A malfunction indicator light (MIL) 25 for indicating the result of the diagnosis is connected to the engine control unit 16.

A switch 26 is an ignition switch that connects the battery 19 to the engine control unit 16. A starter switch 28 is provided for controlling a starter motor 27 in a synchronous manner with respect to the ignition switch 26.

Next, the engine control unit 16 will be described in greater detail. FIG. 2 is a block diagram showing a structure of the engine control unit 16 shown in FIG. 1. The engine control unit 16 includes a CPU 31 that constitutes a computer system. The CPU 31 receives data from both an analog input circuit 32 and a digital input circuit 33. Analog data from the analog input circuit 32 are converted to digital data through an A/D converter 34 and are then supplied to the CPU 31.

The analog input circuit 32 receives the sensor signal Us of the air flow sensor 13, the sensor signal Thw of the water temperature sensor 20, the sensor signal Tha of the intake air temperature sensor 14 and the voltage +B of the battery 19. The digital input circuit 33 receives the cylinder identification signal G1 of the distributor 21, the rotational angle signal Ne of the distributor 21, a lean rich signal Ox of the air-fuel ratio sensor 18 indicative of the oxygen concentration, the sensor signal STO of the throttle sensor 17 indicative of the throttle

valve position of the throttle valve 15, a start signal STA of the starter switch 28 and a signal T of the test switch 24 for setting the diagnosis mode.

The A/D converter 34 acts like a mutiplexer that sequentially selects and reads the sensor signals inputted to the analog input circuit 32 upon receiving corresponding commands from the CPU 31 and converts the sensor signals to the corresponding digital data.

The power supply circuit 35 supplies the voltage +B of the battery 19 to the CPU 31 through the ignition switch 26. The power supply circuit 35 also provides a continuous backup power source Batt.

Output data from the CPU 31 are supplied to output circuits 36, 37, 38 and are then outputted from the output circuits 36, 37, 38 as output signals of the engine control unit 16. That is, the output circuit 36 outputs the ignition signal IGt to the igniter 23. The output circuit 37 outputs a signal W indicative of the result of the diagnosis to control the MIL 25. The output circuit 38 outputs an output signal Tq. The output signal Tq specifies the fuel injection amount corresponding to the operational state of the engine 11 and is outputted to each injector 22a-22d to vary the injection amount of each injector 22a-22d.

The CPU (engine control unit) 31 includes a memory 39 for storing an object oriented self-diagnosis program which will be described in greater detail below. The memory 39 includes a ROM and one of a standby RAM and a nonvolatile EEPROM. The standby

RAM is supplied with the electric power to keep the data stored therein even when the ignition switch 26 is turned off. The self-diagnosis program is stored in the ROM. The standby RAM or the EEPROM stores the malfunction information that is provided when the self-diagnosis program is executed.

A characteristic feature of the present embodiment is found in the self-diagnosis program stored in the ROM of the memory 39. Thus, the self-diagnosis program will now be described in greater detail.

FIG. 3 is a schematic diagram showing an architecture of the self-diagnosis program. The self-diagnosis program includes a plurality of programs, each having an object-oriented design. As is well known in the art, the object-oriented design is different from a previously proposed design in which a software is focused on a process (e.g., a process of fuel injection). In the object-oriented design, modeling is carried out using an object as a basic unit, and each process is described based on characteristics and behavior of the corresponding object. This basic unit is referred to as "object". The program that has the object-oriented design is constructed using the objects as its minimum constituent units. During execution of the program, a series of processes are executed while messages transmitted between the objects are used to connect between the objects. Each object includes data (attribute) and a method (procedure) for processing the data. The method of one object is executed upon receiving the corresponding message from the other object. In this description, although each object conducts a corresponding